## AMENDMENTS TO THE CLAIMS

1. (previously presented) A system for delivering radio frequency (RF) power to a plasma processing system, the system comprising:

an automatic impedance matching network configured to receive RF power from an RF generator;

a fixed impedance matching network coupled between the automatic impedance matching network and a plasma processing chamber, the fixed impedance matching network configured to transform a first impedance presented by the chamber to a second impedance that allows the automatic impedance matching network to operate within a tuning range; and

a voltage-current (VI) probe coupled between the automatic impedance matching network and the fixed impedance matching network.

2. (canceled)

3. (original) The system of claim 1 further comprising:

an absorptive filter coupled between the automatic impedance matching network and the fixed impedance matching network.

4. (original) The system of claim 1 wherein the fixed impedance matching network comprises:

a first end coupled to the automatic impedance matching network and a second end coupled to the plasma processing chamber;

a first capacitor coupled to the second end;

an inductor coupled to the first end, the inductor being serially coupled to the first capacitor; and

a second capacitor coupled to a node between the inductor and the first capacitor, the second capacitor being coupled to a common potential.

5. (original) The system of claim 1 further comprising:

a 50 Ohm coaxial cable coupling the RF generator to the automatic impedance matching network; and

a 30 Ohm coaxial cable coupling the fixed impedance matching network to the automatic impedance matching network.

6. (original) The system of claim 1 wherein the tuning range is at least 3:1 voltage standing wave ratio (VSWR) circle around 30 Ohms.

7. (original) The system of claim 1 further comprising:

an RF switch box configured to switch the RF generator signal from a first electrode to a second electrode in the plasma processing chamber.

8. (original) The system of claim 1 wherein the second impedance is centered around 30 Ohms.

9. (original) The system of claim 1 wherein the plasma processing chamber comprises a high density plasma (HDP) chemical vapor deposition (CVD) chamber.

10. (previously presented) A method of providing radio frequency (RF) power to a plasma processing system, the method comprising:

transforming an impedance presented by a plasma processing chamber to a first impedance matched to a characteristic impedance of a first connection scheme; and

transforming the impedance of the first connection scheme to a second impedance matched to a characteristic impedance of a second connection scheme coupled to an RF generator; and

measuring at least one of a current, a voltage or a phase at a point between an automatic matching network and a fixed matching network.

11. (original) The method of claim 10 wherein the first connection scheme comprises a 30 Ohm coaxial cable.

12. (original) The method of claim 10 wherein the second connection scheme comprises a 50 Ohm coaxial cable.

13. (original) The method of claim 10 wherein the impedance of the first connection scheme is different from the impedance of the second connection scheme.

14. (canceled)

15. (previously presented) A system for coupling a radio frequency (RF) generator to a plasma processing chamber, the system comprising:

a first RF generator coupled to an automatic impedance matching network;

a plasma processing chamber;

a first fixed impedance matching network coupled between the plasma processing chamber and the automatic impedance matching network; and

a voltage-current probe coupled between the automatic matching network and the first fixed impedance matching network.

16. (original) The system of claim 15 further comprising:

an RF switch box coupled between the automatic impedance matching network and the first fixed impedance matching network.

17. (original) The system of claim 15 further comprising:

a second RF generator; and

a second fixed impedance matching network coupled between the second RF generator and the plasma processing chamber.

18. (original) The system of claim 17 wherein the first RF generator comprises a high-frequency RF generator and the second RF generator comprises a low-frequency RF generator.

19. (original) The system of claim 16 wherein the RF switch box is configured to switch the first RF generator signal to a first electrode or a second electrode of the plasma processing chamber.

20. (canceled)

21. (original) The system of claim 15 further comprising:
a combiner configured to combine an output of the first RF generator with an output of a second RF generator.

22. (original) The system of claim 15 further comprising:
a splitter configured to split an RF generator signal for delivery to a plurality of electrodes in the plasma processing chamber.

23. (previously presented) An apparatus for delivering RF power to a plasma processing chamber, the apparatus comprising:
a high-frequency fixed impedance matching network coupled to receive a high-frequency RF signal from a high-frequency RF generator by way of an automatic impedance matching network;
a low-frequency fixed impedance matching network coupled to receive a low-frequency RF signal from a low-frequency RF generator; and
a combiner configured to combine an output of the high-frequency fixed impedance matching network with an output of the low-frequency fixed impedance matching network.

24. (previously presented) A system for delivering radio frequency (RF) power to a plasma processing system, the system comprising:
an automatic impedance matching network configured to receive RF power from an RF generator;
a fixed impedance matching network coupled between the automatic impedance matching network and a plasma processing chamber, the fixed impedance matching network configured to transform a first impedance presented by the chamber to a second impedance that allows the automatic impedance matching network to operate within a tuning range; and
an absorptive filter coupled between the automatic impedance matching network and the fixed impedance matching network.

25. (previously presented) A system for delivering radio frequency (RF) power to a plasma processing system, the system comprising:
an automatic impedance matching network configured to receive RF power from an RF generator; and
a fixed impedance matching network coupled between the automatic impedance matching network and a plasma processing chamber, the fixed impedance matching network configured to transform a first impedance presented by the chamber to a second impedance that allows the automatic impedance matching network to operate within a tuning range;

wherein the fixed impedance matching network comprises:

a first end coupled to the automatic impedance matching network and a second end coupled to the plasma processing chamber;

a first capacitor coupled to the second end;

an inductor coupled to the first end, the inductor being serially coupled to the first capacitor; and

a second capacitor coupled to a node between the inductor and the first capacitor, the second capacitor being coupled to a common potential.

26. (previously presented) A system for delivering radio frequency (RF) power to a plasma processing system, the system comprising:

an automatic impedance matching network configured to receive RF power from an RF generator;

a fixed impedance matching network coupled between the automatic impedance matching network and a plasma processing chamber, the fixed impedance matching network configured to transform a first impedance presented by the chamber to a second impedance that allows the automatic impedance matching network to operate within a tuning range;

a 50 Ohm coaxial cable coupling the RF generator to the automatic impedance matching network; and

a 30 Ohm coaxial cable coupling the fixed impedance matching network to the automatic impedance matching network.

27. (previously presented) A system for delivering radio frequency (RF) power to a plasma processing system, the system comprising:

an automatic impedance matching network configured to receive RF power from an RF generator; and

a fixed impedance matching network coupled between the automatic impedance matching network and a plasma processing chamber, the fixed impedance matching network configured to transform a first impedance presented by the chamber to a second impedance that allows the automatic impedance matching network to operate within a tuning range;

wherein the tuning range is at least 3:1 voltage standing wave ratio (VSWR) circle around 30 Ohms.

28. (previously presented) A system for delivering radio frequency (RF) power to a plasma processing system, the system comprising:

an automatic impedance matching network configured to receive RF power from an RF generator; and

a fixed impedance matching network coupled between the automatic impedance matching network and a plasma processing chamber, the fixed impedance matching network configured to transform a first impedance presented by the chamber to a second impedance that allows the automatic impedance matching network to operate within a tuning range; and

an RF switch box configured to switch the RF generator signal from a first electrode to a second electrode in the plasma processing chamber.

29. (previously presented) A system for delivering radio frequency (RF) power to a plasma processing system, the system comprising:

an automatic impedance matching network configured to receive RF power from an RF generator; and

a fixed impedance matching network coupled between the automatic impedance matching network and a plasma processing chamber, the fixed impedance matching network configured to transform a first impedance presented by the chamber to a second impedance that allows the automatic impedance matching network to operate within a tuning range;

wherein the second impedance is centered around 30 Ohms.

30. (previously presented) A method of providing radio frequency (RF) power to a plasma processing system, the method comprising:

transforming an impedance presented by a plasma processing chamber to a first impedance matched to a characteristic impedance of a first connection scheme; and

transforming the impedance of the first connection scheme to a second impedance matched to a characteristic impedance of a second connection scheme coupled to an RF generator;

wherein the first connection scheme comprises a 30 Ohm coaxial cable.

31. (previously presented) A system for coupling a radio frequency (RF) generator to a plasma processing chamber, the system comprising:

a first RF generator coupled to an automatic impedance matching network;

a plasma processing chamber;

a first fixed impedance matching network coupled between the plasma processing chamber and the automatic impedance matching network; and

an RF switch box coupled between the automatic impedance matching network and the first fixed impedance matching network.

32. (previously presented) The system of claim 31 wherein the RF switch box is configured to switch the first RF generator signal to a first electrode or a second electrode of the plasma processing chamber.

33. (currently amended) A system for coupling a radio frequency (RF) generator to a plasma processing chamber, the system comprising:

a first RF generator coupled to an automatic impedance matching network;

a plasma processing chamber;

a first fixed impedance matching network coupled between the plasma processing chamber and the automatic impedance matching network;

a second RF generator; and

a second fixed impedance matching network coupled between the second RF generator and the plasma processing chamber[[.]];

wherein the first RF generator comprises a high-frequency RF generator and the second RF generator comprises a low-frequency RF generator.

34. (canceled)

35. (previously presented) A system for coupling a radio frequency (RF) generator to a plasma processing chamber, the system comprising:

a first RF generator coupled to an automatic impedance matching network;

a plasma processing chamber;

a first fixed impedance matching network coupled between the plasma processing chamber and the automatic impedance matching network; and

a combiner configured to combine an output of the first RF generator with an output of a second RF generator.

36. (canceled)